Aspects of the Microglia Transcriptome

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Microglia Information Converted to RNA-Seq Outputs Generates Laborious Integrative Analyses.

Marissa Lisa Dubbelaar

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Abbreviations

General

Term	Fullname
3′ UTR	3′ untranslated region
Aβ	amyloid beta
AD	Alzheimer's disease
ALS	Amyotrophic lateral sclerosis
API	application programming interface
ASC	apoptosis-associated speck-like proteins containing a caspase recruitment domain
ATAC	assay for transposase accessible chromatin
ATP	adenosine triphosphate
BG	basal ganglia
BRAIN-SAT	brain interactive sequencing analysis tool
CA1	*cornu Ammonis* 1
CARD	caspase recruitment domain
ChIP	chromatin immunoprecipitation
CNS	cental nervous system
CPM	count per million
DAFS	data-adaptive flag method for RNA-Seq data
DAM	disease-associated microglia
DAMP	damage-associated molecular pattern
DEA	differential expression analysis
DNA	deoxyribonucleic acid
E7.5	embryonic day 7.5
E8.5	embryonic day 8.5
EAE	experimental autoimmune encephalomyelitis
EdU	5-Ethynyl-2´-deoxyuridine
EMP	erythro-myeloid progenitor
ENA	european nucleotide archive
EOAD	early-onset Alzheimer's disease
ETS	expressed sequencing tags
FACS	fluorescence-activated cell sorting
FC	fold change
FDR	false discovery rate
GEO	gene expression omnibus
GF	germ-free
GO	gene ontology
GOAD	glia open access database
GWAS	genome-wide association studies
HGP	human genome project
IdU	5-iodo-2'-deoxyuridine
LOAD	late-onset AD

LPM	large peritoneal macrophages
LPS	lipopolysaccharides
M1	classical activation
M2	alternative activation
MDI	microglia developmental index
MGnD	microglial neurodegenerative/-toxic
MHC	major histocompatibility complex
miRNA	micro ribonucleic acid
MO	myelinating oligodendrocytes
MOG	myelin-oligodendrocyte-glycoprotein peptide
MOLGENIS	molecular genetics information systems
mRNA	messenger ribonucleic acid
MS	Multiple sclerosis
NAc	nucleus accumbens
NFO	newly formed oligodendrocytes
ORF	open reading frame
P9	postnatal day 9
PAMP	pathogen-associated molecular pattern
PCA	principal component analysis
PCR	polymerase chain reaction
PD	Parkinson's disease
PLAC-seq	proximity ligation-assisted ChIP-Seq
PMD	post-mortem delday
pol II	ribonucleic acid polymerase II
PTM	posttranslational modifications
QEA	quantitative expression analysis
RA	retinoic acid
REST	representational state transfer
RNA	ribonucleic acid
RNA-Seq	ribonucleic acid sequencing
RT	room temperature
scRNA-Seq	single-cell RNA sequencing
SNc	substantia nigra pars compacta
SPF	specific pathogen-free
SPM	small peritoneal macrophages
SRA	sequencing read archive
ST	spatial transcriptomics
TBP	TATA-binding proteins
TF	transcription factor
TLR	toll-like receptor
TPM	transcript per million
tSNE	t-distributed stochastic neighbor embedding
UMI	unique molecular identifier
VTA	ventral tegmental area

YS	yolk sac

Gene names

Symbol	Name	Synonyms
ADGRG1	adhesion G protein-coupled receptor G1	*GPR56, TM7LN4, TM7XN1*
ALDH1L1	aldehyde dehydrogenase 1 family member L1	*FTHFD, 10-fTHF*
ALOX5AP	arachidonate 5-lipoxygenase activating protein	*FLAP*
ANK1	ankyrin 1	*ANK, SPH1*
ANKRD39	ankyrin repeat domain 39	*MGC41816*
APLP2	amyloid beta precursor like protein 2	*APPL2, APPH*
APOC1	apolipoprotein C1	
APOE	apolipoprotein E	*AD2*
APP	amyloid beta precursor protein	*AD1*
ATF3	activating transcription factor 3	
AXL	AXL receptor tyrosine kinase	*UFO, JTK11, Tyro7, ARK*
B2M	beta-2-microglobulin	
BBS10	Bardet-Biedl syndrome 10	*C12orf58, FLJ23560*
BIN1	bridging integrator 1	*AMPHL, SH3P9, AMPH2*
C1QA	complement C1q A chain	
C1QB	complement C1q B chain	
C1QC	complement C1q C chain	*C1QG*
C3	complement C3	*CPAMD1, ARMD9, C3a, C3b*
C4A	complement C4A (Rodgers blood group)	*CPAMD2, C4S, CO4, C4, C4A3, C4A2, C4A4, C4A6, C4B, RG*
C5AR1	complement C5a receptor 1	*C5R1, C5A, C5AR, CD88*
CABLES1	Cdk5 and Abl enzyme substrate 1	*HsT2563, FLJ35924*
CCL2	C-C motif chemokine ligand 2	*SCYA2, MCP1, MCP-1, MCAF, SMC-CF, GDCF-2, HC11, MGC9434*
CCL3	C-C motif chemokine ligand 3	*SCYA3, G0S19-1, LD78ALPHA, MIP-1-alpha*
CCL4	C-C motif chemokine ligand 4	*LAG1, SCYA4, MIP-1-beta, Act-2, AT744.1*
CCL5	C-C motif chemokine ligand 5	*D17S136E, SCYA5, RANTES, SISd, TCP228, MGC17164*
CCR2	C-C motif chemokine receptor 2	*CMKBR2, CC-CKR-2, CKR2, MCP-1-R, CD192, FLJ78302*
CCR5	C-C motif chemokine receptor 5	*CMKBR5, CKR-5, CC-CKR-5, CKR5, CD195, IDDM22*
CCR6	C-C motif chemokine receptor 6	*STRL22, CKR-L3, GPR-CY4, CMKBR6, GPR29, DRY-6, DCR2, BN-1, CD196*
CD14	CD14 molecule	
CD34	CD34 molecule	
CD40	CD40 molecule	*TNFRSF5, p50, Bp50*
CD44	CD44 molecule (Indian blood group)	*MIC4, MDU2, MDU3, IN, MC56, Pgp1, CD44R, HCELL, CSPG8*
CD52	CD52 molecule	*CDW52, HE5, EDDM5*
CD58	CD58 molecule	*LFA3*
CD68	CD68 molecule	*SCARD1, macrosialin, GP110, DKFZp686M18236, LAMP4*

CD86	CD86 molecule	*CD28LG2, B7.2, B7-2*
CD9	CD9 molecule	*MIC3, BA2, P24, TSPAN29, MRP-1*
CIR1	corepressor interacting with RBPJ, CIR1	*CIR*
CKB	creatine kinase B	*CKBB*
CLEC7A	C-type lectin domain containing 7A	*CLECSF12, dectin-1, hDectin-1, CD369, SCARE2*
COMT	catechol-O-methyltransferase	
CRYBB1	crystallin beta B1	
CSF1	colony stimulating factor 1	*M-CSF, MCSF, MGC31930*
CSF1R	colony stimulating factor 1 receptor	*FMS, C-FMS, CSFR, CD115*
CST7	cystatin F	
CTSB	cathepsin B	
CTSD	cathepsin D	*CPSD, CLN10*
CTSZ	cathepsin Z	*CTSX*
CX3CR1	C-X3-C motif chemokine receptor 1	*GPR13, CMKBRL1, CMKDR1, V28, CCRL1*
CXCL10	C-X-C motif chemokine ligand 10	*INP10, SCYB10, IFI10, IP-10, crg-2, mob-1, C7, gIP-10*
CXCL16	C-X-C motif chemokine ligand 16	*SR-PSOX, CXCLG16, SRPSOX*
CXCR2	C-X-C motif chemokine receptor 2	*IL8RB, CMKAR2, CD182*
CXCR4	C-X-C motif chemokine receptor 4	*LESTR, NPY3R, HM89, NPYY3R, D2S201E, fusin, HSY3RR, NPYR, CD184*
CYTB	mitochondrially encoded cytochrome b	*MTCYB, COB, CYTB, UQCR3*
DAB2	DAB adaptor protein 2	*DOC-2*
DNAJB5	DnaJ heat shock protein family (Hsp40) member B5	*Hsc40*
DOCK8	dedicator of cytokinesis 8	*FLJ00026, FLJ00152, ZIR8, FLJ00346*
DPY30	dpy-30 histone methyltransferase complex regulatory subunit	*Saf19, HDPY-30, Cps25*
EEF1B2	eukaryotic translation elongation factor 1 beta 2	
EGR1	early growth response 1	*TIS8, G0S30, NGFI-A, KROX-24, ZIF-268, AT225, ZNF225*
ENTPD1	ectonucleoside triphosphate diphosphohydrolase 1	*CD39, NTPDase-1, ATPDase, SPG64*
Epb4.1l2	erythrocyte protein band 4.1-like 2	
ERAP2	endoplasmic reticulum aminopeptidase 2	*L-RAP, LRAP*
ERCC1	ERCC excision repair 1, endonuclease non-catalytic subunit	*RAD10*
F11R	F11 receptor	*JAM1, PAM-1, JCAM, JAM-1, JAM-A, JAMA, CD321*
FCAR	Fc fragment of IgA receptor	*CD89*
FFAR2	free fatty acid receptor 2	*GPR43, FFA2R*
FKBP3	FKBP prolyl isomerase 3	*FKBP-25, PPIase*
FOS	Fos proto-oncogene, AP-1 transcription factor subunit	*c-fos, AP-1*
FSCN1	fascin actin-bundling protein 1	*SNL, p55, FLJ38511*
GAS7	growth arrest specific 7	*KIAA0394, MGC1348*
GNA13	G protein subunit alpha 13	*G13, MGC46138*
GNLY	granulysin	*LAG2, NKG5, LAG-2, D2S69E, TLA519*
GOLPH3L	golgi phosphoprotein 3 like	*GPP34R*
GPR34	G protein-coupled receptor 34	
GPR84	G protein-coupled receptor 84	*EX33*

GRN	granulin precursor	*PCDGF, PGRN, CLN11*
GUSB	glucuronidase beta	
H2-D1	histocompatibility 2, D region locus 1	
H2-K1	histocompatibility 2, K1, K region	
HEXB	hexosaminidase subunit beta	
HIF1A	hypoxia inducible factor 1 subunit alpha	*MOP1, HIF-1alpha, PASD8, HIF1, bHLHe78*
HLA-B	major histocompatibility complex, class I, B	*AS*
HLA-DRA	major histocompatibility complex, class II, DR alpha	*HLA-DRA1*
HPRT1	hypoxanthine phosphoribosyltransferase 1	*HPRT, HGPRT*
IGF1	insulin like growth factor 1	*IGF1A, IGFI, IGF-I, IGF*
IKBIP	IKBKB interacting protein	*FLJ31051, IKIP*
IL13	interleukin 13	*P600, IL-13, ALRH, BHR1, MGC116786, MGC116788, MGC116789*
IL1B	interleukin 1 beta	*IL1F2, IL-1B, IL1-BETA*
IL1R2	interleukin 1 receptor type 2	*IL1RB, CD121b*
IL4	interleukin 4	*BSF1, IL-4, BCGF1, BCGF-1, MGC79402*
IL6	interleukin 6	*IFNB2, IL-6, BSF2, HGF, HSF*
IRF1	interferon regulatory factor 1	*MAR*
IRF8	interferon regulatory factor 8	*ICSBP1, IRF-8, ICSBP*
IRGM	immunity related GTPase M	*IRGM1, LRG47, LRG-47, IFI1*
ITGAM	integrin subunit alpha M	*CR3A, CD11B, MAC-1, CD11b*
ITGAX	integrin subunit alpha X	*CD11C, CD11c*
LGALS3	galectin 3	*LGALS2, MAC-2, GALIG*
LGALS3BP	galectin 3 binding protein	*MAC-2-BP, 90K, BTBD17B, TANGO10B, M2BP, gp90, CyCAP*
LGMN	legumain	*PRSC1, LGMN1*
LPL	lipoprotein lipase	*LIPD*
LTC4S	leukotriene C4 synthase	*MGC33147*
MAEA	macrophage erythroblast attacher, E3 ubiquitin ligase	*EMP, GID9*
MAFB	MAF bZIP transcription factor B	*KRML*
MAP3K7	mitogen-activated protein kinase kinase kinase 7	*TAK1, MEKK7*
MCM5	minichromosome maintenance complex component 5	*CDC46*
MEF2A	myocyte enhancer factor 2A	*RSRFC4, RSRFC9*
MERTK	MER proto-oncogene, tyrosine kinase	*mer, RP38, c-Eyk, Tyro12*
MPZL1	myelin protein zero like 1	*PZR, FLJ21047*
MRC1	mannose receptor C-type 1	*MRC1L1, CLEC13D, CD206, bA541I19.1, CLEC13DL*
MRC2	mannose receptor C type 2	*KIAA0709, ENDO180, CLEC13E, CD280*
MRPS36	mitochondrial ribosomal protein S36	*DC47, MRP-S36*
MYO18A	myosin XVIIIA	*KIAA0216, MysPDZ*
ND1	mitochondrially encoded NADH:ubiquinone oxidoreductase core subunit 1	*MTND1*
NFKB2	nuclear factor kappa B subunit 2	*LYT-10, p52, p105, NF-kB2, p49/p100*
NPC2	NPC intracellular cholesterol transporter 2	*HE1, NP-C2, EDDM1*
NR2C2	nuclear receptor subfamily 2 group C member 2	*TR4, TAK1, TR2R1, hTAK1*

NT5DC3	5′-nucleotidase domain containing 3	*TU12B1-TY, FLJ11266*
NTSR1	neurotensin receptor 1	*NTR*
OLFML3	olfactomedin like 3	*HNOEL-iso, OLF44*
P2RY12	purinergic receptor P2Y12	*P2Y12, SP1999, HORK3*
P2RY13	purinergic receptor P2Y13	*GPR94, GPR86, FKSG77, P2Y13*
P2RY6	pyrimidinergic receptor P2Y6	*P2Y6*
PDGFA	platelet derived growth factor subunit A	*PDGF1, PDGF-A*
PDGFB	platelet derived growth factor subunit B	*SIS, SSV*
PIK3C2B	phosphatidylinositol-4-phosphate 3-kinase catalytic subunit type 2 beta	*C2-PI3K, PI3K-C2beta*
PLD3	phospholipase D family member 3	*HU-K4*
PMEPA1	prostate transmembrane protein, androgen induced 1	*TMEPAI, STAG1*
PROS1	protein S	*PROS*
PSAT1	phosphoserine aminotransferase 1	*PSA*
PSEN1	presenilin 1	*AD3, FAD, S182, PS1*
PSEN2	presenilin 2	*AD4, AD3L, STM2, PS2*
PSTPIP1	proline-serine-threonine phosphatase interacting protein 1	*PSTPIP, CD2BP1L, CD2BP1, CD2BP1S, H-PIP, PAPAS*
PTPRC	protein tyrosine phosphatase receptor type C	*CD45, LCA, T200, GP180*
PYCARD	PYD and CARD domain containing	*TMS-1, CARD5, ASC*
RARA	retinoic acid receptor alpha	*RAR, NR1B1*
RARB	retinoic acid receptor beta	*HAP, NR1B2, RRB2*
RELA	RELA proto-oncogene, NF-kB subunit	*NFKB3, p65*
RHOB	ras homolog family member B	*ARH6, ARHB, RhoB, RHOH6, MST081*
RNF7	ring finger protein 7	*SAG, ROC2, CKBBP1*
RPL41	ribosomal protein L41	*L41*
RPS23	ribosomal protein S23	*S23, uS12*
S100A12	S100 calcium binding protein A12	*p6, MRP6, CGRP, CAAF1, CAGC, ENRAGE*
SAG	S-antigen visual arrestin	*ARRESTIN, RP47*
SALL1	spalt like transcription factor 1	*TBS, Hsal1, ZNF794*
SALL3	spalt like transcription factor 3	*ZNF796*
SEMA7A	semaphorin 7A (John Milton Hagen blood group)	*SEMAL, H-Sema-L, CD108*
SEPSECS	Sep (O-phosphoserine) tRNA:Sec (selenocysteine) tRNA synthase	*SLA/LP, SLA*
SERPINE2	serpin family E member 2	*PI7, PN1, GDN, PNI, nexin*
Siglech	sialic acid binding Ig-like lectin H	
SLA	Src like adaptor	*SLA1, SLAP-1, hSLAP, SLAP*
SLCO2B1	solute carrier organic anion transporter family member 2B1	*SLC21A9, OATP-B, OATP2B1*
SMAD1	glycyl-tRNA synthetase 1	*MADH1, MADR1, JV4-1*
SMAD1	SMAD family member 1	*NA, SMURF2*
SMURF2	SMAD specific E3 ubiquitin protein ligase 2	*ALS, ALS1, IPOA*
SOD1	superoxide dismutase 1	*C11orf32, gp250, LR11, LRP9, SorLA, SorLA-1*
SORL1	sortilin related receptor 1	*NA, SOX4*
SOX4	SRY-box transcription factor 4	*ON*

SPARC	secreted protein acidic and cysteine rich	*PU.1, SPI-A, OF, SFPI1, SPI-1*
SPI1	Spi-1 proto-oncogene	*APRF*
STAT3	signal transducer and activator of transcription 3	*PJS, LKB1*
STK11	serine/threonine kinase 11	*hUNC18, MUNC18-1, UNC18, rbSec1*
STXBP1	syntaxin binding protein 1	*C1orf9, CH1, SLP1, OPT*
SUCO	SUN domain containing ossification factor	*SLP1, SYTL1*
SYNGR1	synaptogyrin 1	
TGFA	transforming growth factor alpha	*TGFB, DPD1, CED, TGFbeta*
TGFB1	transforming growth factor beta 1	*MSSE, ESS1, ALK-5, ACVRLK4, ALK5, TBRI, TBR-i*
TGFBR1	transforming growth factor beta receptor 1	*MFS2, TBRII, TBR-ii*
TGFBR2	transforming growth factor beta receptor 2	*CTMP*
THEM4	thioesterase superfamily member 4	
TLR7	toll like receptor 7	
TMEM119	transmembrane protein 119	
TMEM173	stimulator of interferon response cGAMP interactor 1	*FLJ38577, NET23, ERIS, MPYS, STING, MITA*
TNF	tumor necrosis factor	*TNFA, TNFSF2, DIF, TNF-alpha*
TPT1	tumor protein, translationally-controlled 1	*TCTP, fortilin*
TREM2	triggering receptor expressed on myeloid cells 2	*TREM-2, Trem2a, Trem2b, Trem2c*
TYROBP	transmembrane immune signaling adaptor TYROBP	*PLOSL, DAP12, PLO-SL, KARAP*
VGLL4	vestigial like family member 4	*KIAA0121*
VSIR	V-set immunoregulatory receptor	*C10orf54, SISP1, GI24, B7-H5, B7H5, VISTA, PD-1H*